L. JANECEK.

ACETYLENE GENERATOR.

APPLICATION FILED NOV. 18, 1908.

991,621.

Patented May 9, 1911.

2 SHEETS—SHEET 1.

Fig. 2.

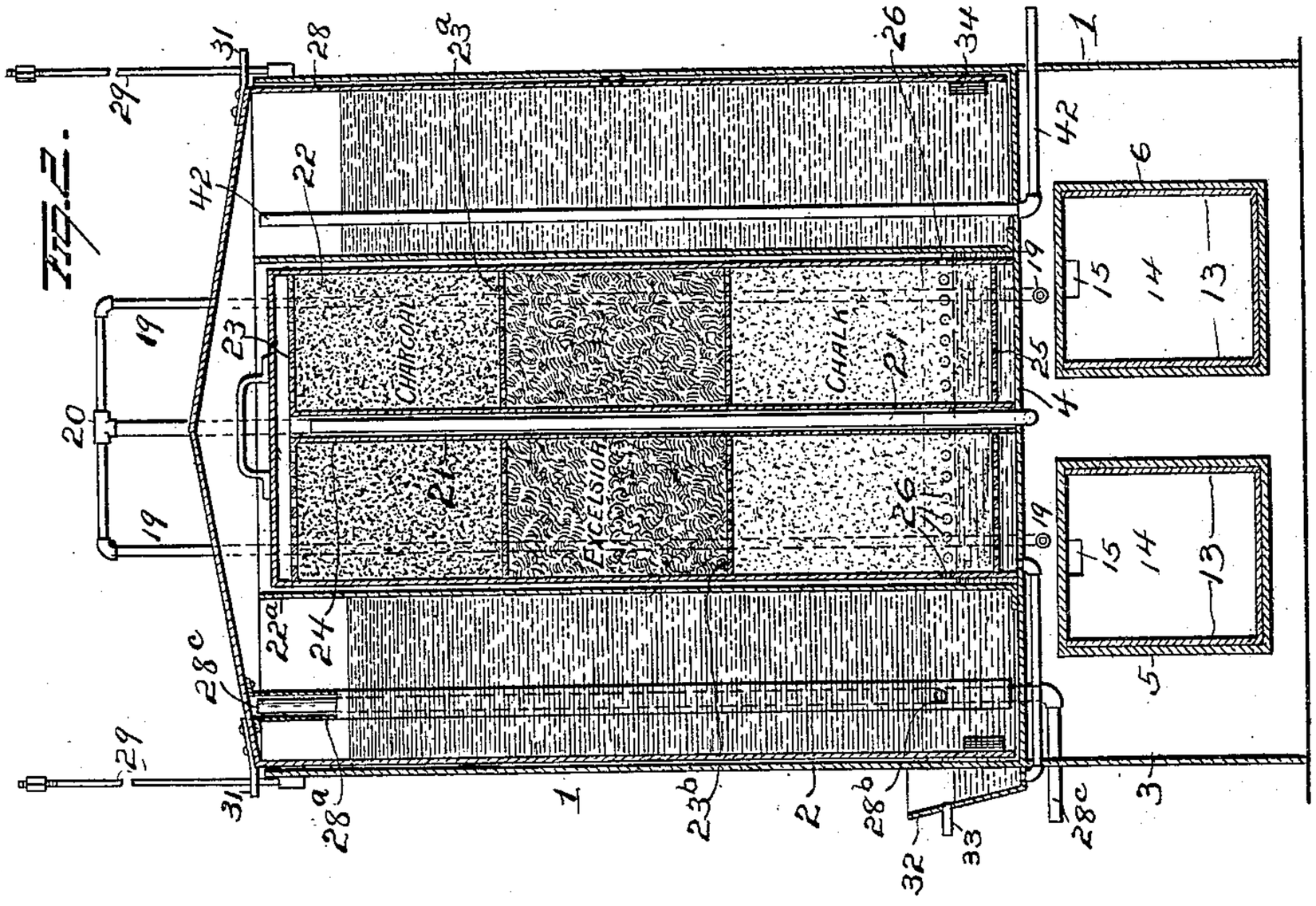
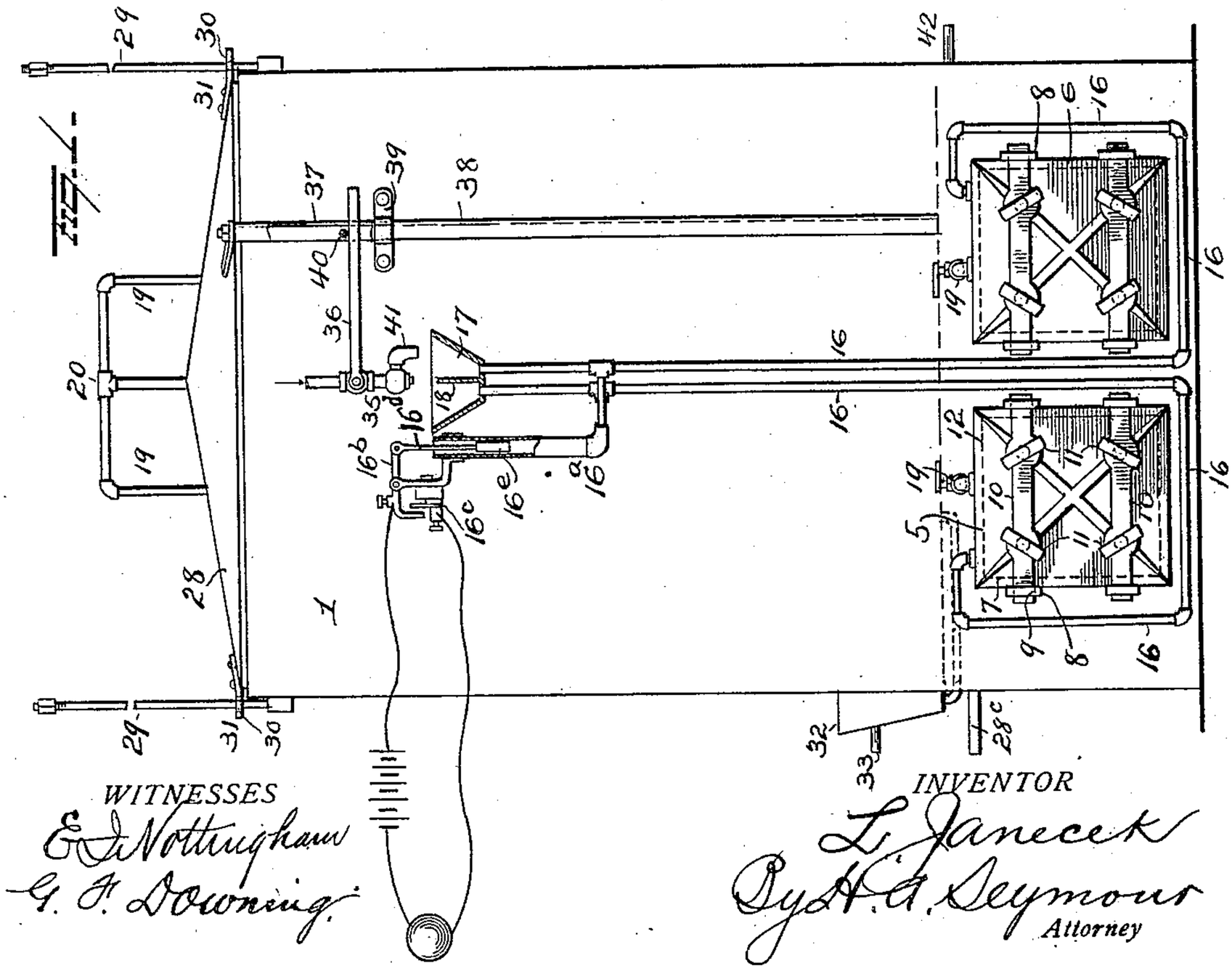



Fig. 1.



WITNESSES

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2 SHEETS—SHEET 2.

FIG. 3.

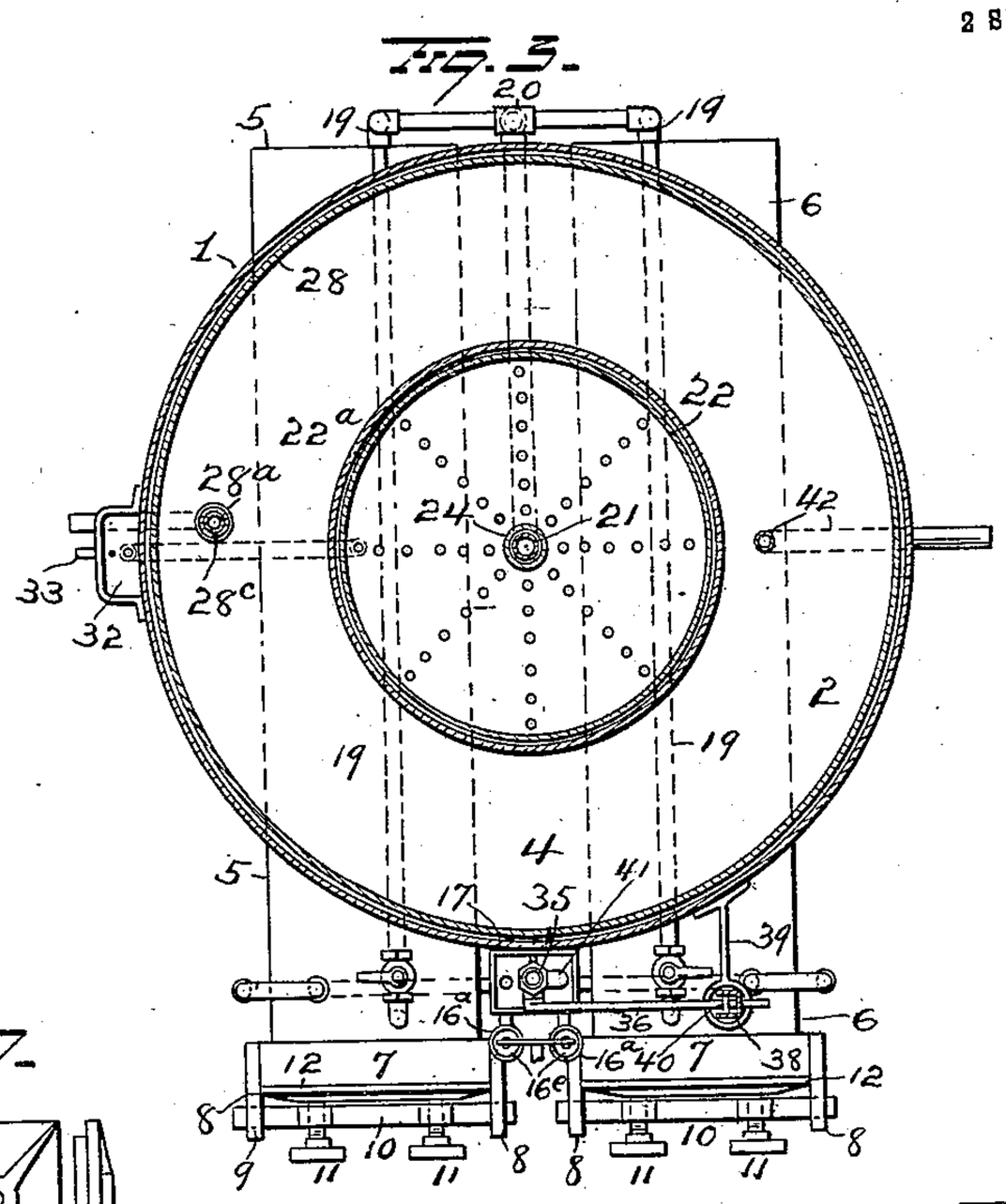



FIG. 7.

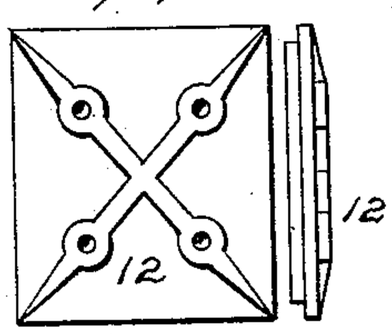



FIG. 8.

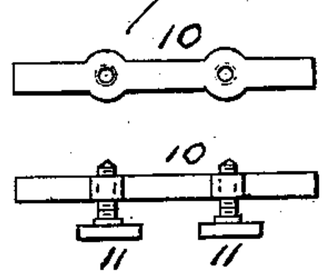



FIG. 4.

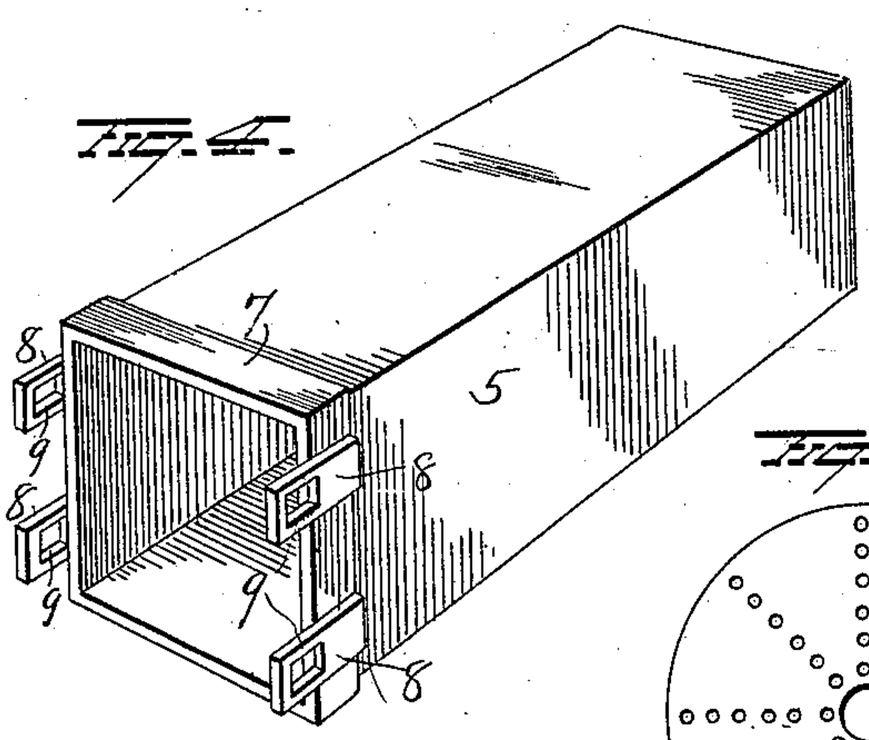



FIG. 5.

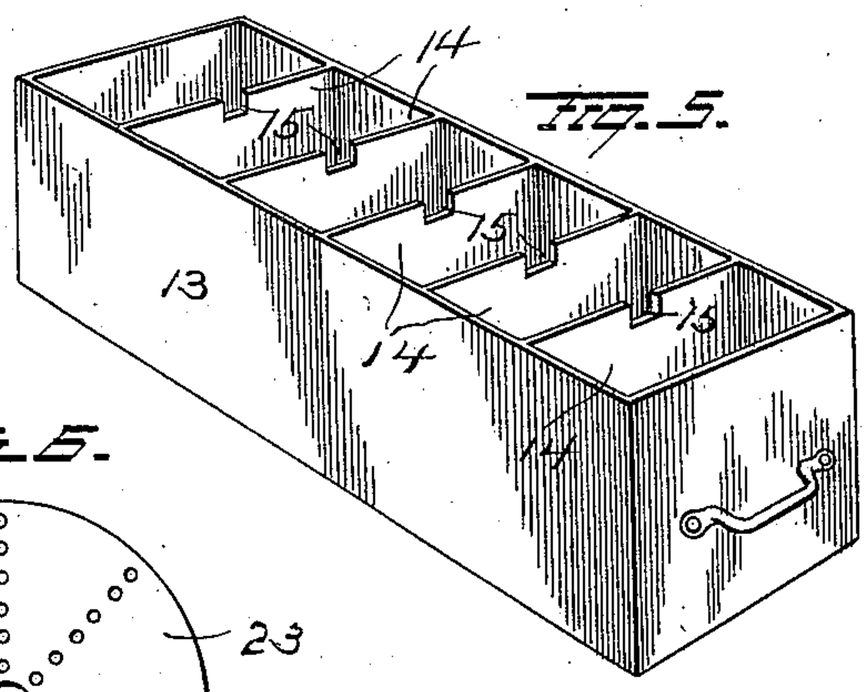
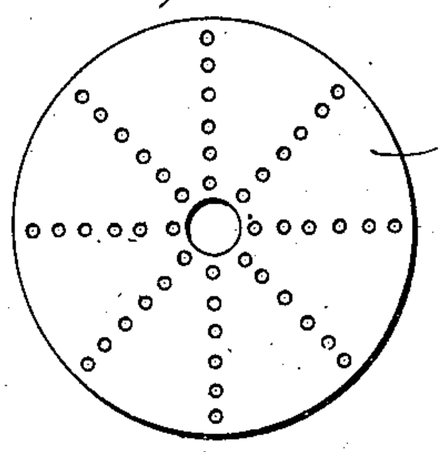



FIG. 6.

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# UNITED STATES PATENT OFFICE.

LUDWIG JANECEK, OF FREMONT, NEBRASKA, ASSIGNOR OF ONE-HALF TO FRANK DOLEZAL, OF FREMONT, NEBRASKA.

## ACETYLENE-GENERATOR.

991,621. Specification of Letters Patent. **Patented May 9, 1911.**

Application filed November 18, 1908. Serial No. 463,214.

*To all whom it may concern:*

Be it known that I, LUDWIG JANECEK, of Fremont, in the county of Dodge and State of Nebraska, have invented certain new and useful Improvements in Acetylene-Generators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in acetylene generators, the object of the invention being to provide a generator in which the production of gas is automatically regulated so that the supply at all times shall be proportionate to the consumption, and at a pressure which varies so slightly that the steadiness of the flame at the burners will not be materially affected by such variations.

A further object is to provide a generator which may be recharged while the machine is in operation thereby enabling the machine to be used without interruption.

A further object is to provide an apparatus so constructed as to minimize the danger from explosions and which will be safe and economical in operation and one so simple as to be readily understood and operated by unskilled persons.

With these objects in view my invention consists in the parts and combinations of parts as will be more fully described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in front elevation partly in section of my improved apparatus. Fig. 2 is a view in vertical section of same. Fig. 3 is a view in horizontal section. Fig. 4 is a view in perspective of one of the carbid chambers. Fig. 5 is a view in perspective of the carbid holding drawers. Fig. 6 is a view in plan of one of the perforated diaphragms employed in the filter. Fig. 7 shows the door for the carbid chamber in front and side elevations, and Fig. 8 shows the door locking device in plan and also edge elevation.

1 represents the body of the generator preferably cylindrical in shape and mounted on a suitable foundation or support. This body is divided into upper and lower compartments 2 and 3 by the horizontal partition 4, which latter is water tight and forms the bottom of the gas chamber. Located within the lower compartment are the two rectangular gas tight chambers 5 and 6, arranged side by side as shown in Fig. 1, and projecting from the same at the front and rear as shown in Fig. 3. The forwardly projecting ends of the chambers are each embraced by a metal collar 7, having outwardly projecting ears 8. These ears are slotted at 9 to receive the ends of the locking bars 10 carrying set screws 11, the inner ends of which are adapted to bear against the outer face of the door 12. These doors 12 are provided with outwardly projecting flanges, which bear against the outer edge of the chamber or compartments 5 and 6, suitable gaskets of rubber, soft metal, or other packing material being interposed between the flange and the outer edge of the door for hermetically sealing the latter. Each chamber 5—6 is designed to receive a drawer 13 shown in Fig. 5. These drawers are of a size and shape to be readily introduced into and removed from the chambers, and each drawer is divided into a series of compartments by the vertical partitions 14, each having a slot 15 therethrough at the upper edge of the partition. Water supply pipes 16 located outside, and to the front of the generator, pass from the funnel 17 down preferably between the two compartments 5—6 under said compartments, and then up, and each discharges into its compartment at the top and near the front thereof, as shown in Fig. 1. The drawers 13, as before explained, are designed to hold the carbid from which the gas is generated by contact with water, the carbid being placed in the several compartments of each drawer. The drawers are so located with relation to the discharge ends of the water pipes 16, that the water as it enters the chambers 5 or 6 is discharged into the first compartment of the drawer therein, thus generating gas from the carbid in that compartment alone. As the carbid in that compartment is used up, the water filling said compartment passes through the slot 15 in the upper edge of the partition, into the second compartment and so on through the entire series of compartments in the drawer.

The funnel 17 to which the water supply pipes 16 are connected is provided centrally with a partition 18 located between the pipes 16 and terminating at the top below the top of the funnel 17. These pipes 16 are comparatively small and after the water

*

has filled the last compartment of the first drawer it backs up in the pipe 16 until it reaches the level of the top of the partition 18 in the funnel 17 and then passes through the other pipe 16 down to the carbid into the other drawer.

After the carbid in one drawer has been exhausted, the door 12 covering same may be removed and the drawer withdrawn and recharged for further and continued operation of the apparatus. In this way by recharging one drawer while the other is in use the machine may be used continuously without interfering in the slightest with the generation of gas or affecting the pressure and steadiness of the flame.

Leading from the top of each compartment or chamber 5—6 are the pipes 19, each having a cock, the latter being at the front of the generator where it is easily accessible. These pipes pass rearwardly through the lower compartment 3 of the generator, and out through the rear thereof, as shown in Fig. 3, and then upwardly to a point preferably above the top of the generator but certainly above the top of partition 18 in funnel 17. These pipes 19 come together at their tops as at 20, and then pass downwardly as a single pipe at the rear of the generator to a point below the partition 4. It then passes into the compartment to a point approximately at the center of partition and thence upwardly up through the latter and terminates near the top of the body 1, as shown in Fig. 2.

Located in the upper compartment 2 of the generator is the filter or purifier 22, shown in Fig. 2. This filter comprises a cylindrical body, closed at its top and open at its bottom, the closed top being provided with a handle by which the filter may be manipulated. Located within the filter 22 is the pipe 24 slightly greater in diameter than the upwardly extending section of the gas discharge pipe 21 so that it may be easily and readily placed on said pipe 21. Soldered or otherwise secured to the upper free end of pipe 24 just below the open upper end of the latter is the perforated diaphragm 23. In assembling this filter 22 it is removed from the generator and turned upside down and the pipe 24 with the diaphragm 23 attached thereto is placed within the filter. Charcoal is then placed on diaphragm 23 to a sufficient depth, after which a second perforated diaphragm $23^a$ is placed on the pipe 24 and is covered with damp excelsior to approximately one-third the depth of the filter. A third diaphragm $23^b$ is placed on pipe 24, after which chalk or other suitable material is placed in the filter and confined therein by a fourth diaphragm 25 which may be secured to the pipe 24 and the filter body 22 by any suitable means.

When the filter or purifier has been thus charged it is placed within the casing $22^a$, open at its top and secured at its lower end to partition 4 with the gas discharge pipe 21 within pipe 24 so that the unpurified gas discharged from pipe 21 enters the filter above diaphragm 23 and passes through the latter through the charcoal, excelsior and chalk and the gas purified by its contact with these materials, escapes through the perforations 26, near the lower end of the filter body above the water in casing $22^a$, and thence up through casing and into upper compartment 1.

The bell 28 conforms in shape to the body of the generator, and is guided in its upward movements by the rods 29 carried by the body 1 of the generator, and passing through the eyes 30 in straps 31 secured to the top of the bell 28.

Communicating with the interior of the casing $22^a$ is a funnel 32, adapted to supply water to the interior of compartment formed by casing $22^a$, the funnel being provided with an escape pipe 33 which limits the height of the water within casing $22^a$. This funnel may be of any height or located at any point throughout the body of the generator, its position and the location of the exhaust pipe 33 being dependent on the depth of water required in the casing $22^a$. The lower end of the bell 28 which is weighted at 34, rests within the water in compartment 2, and is water sealed, and operates by its rise and fall to maintain a constant pressure of the gas within said compartment.

Water is supplied to the funnel 17, which as before explained, is connected to the water pipes 16 leading to the carbid drawers, by the faucet 35 which is coupled to a water pipe leading from any suitable source of supply. This faucet is provided with a valve carrying an arm 36 which latter passes through an elongated slot 37 in the grooved rod 38. This rod is carried by the bell 28 and is guided in its movements by the bracket 39 secured to the outer face of the body 1 of the generator. When the apparatus is in the position shown in Fig. 1, with the arm 36 horizontal, water will be admitted to the funnel from the faucet and pass down through pipes 16 into compartment 6. As the gas is generated by contact of the water with the carbid contained in the drawer in compartment 6, it passes out through pipes 19 and 21 into the purifier or filter and from thence through casing $22^a$ into compartment 2 under the bell 28. As the gas fills the chamber 2 it elevates the bell 28 which carries with it the grooved rod 38. This upward movement of the grooved rod 38 elevates the lever 36 which operates to gradually shut off the supply of water to the funnel 17. If the upward movement of the bell 28 be continued, the

end of the arm or lever 36 will pass out of slot 37 thus leaving the lever or arm 36 in its inclined position with the water completely shut off. As the gas is used the bell gradually drops and the pin 40 carried by the grooved rod 38 engages the end of the arm or lever 36 thus causing the latter to enter the slot 37 and be moved downwardly with the rod 38, thus gradually opening the water supply as the bell 28 descends. By this mechanism and operation, I automatically supply the water to the carbid in amounts sufficient to maintain the necessary pressure and volume within the bell 28. As this volume increases the water is shut off thereby stopping the generation of gas. As the volume decreases water is turned on thus continuing the generation in proportion to the amount of gas consumed.

After all the carbid in one drawer has been used and it is desired to remove the exhausted carbid and refill the drawer, the bent nozzle 41 which is swiveled to faucet 35, should be turned so as to discharge on the other side of partition 18 in funnel 17. After the compartment becomes filled, the water not only rises in the water pipes 16, but in the gas pipes 19, hence after the carbid in one compartment has been exhausted, the cock in the gas pipe 19 should be closed, thus confining the water therein, after which the door of the exhausted compartment is opened thus permitting the water therein to escape, and the drawer removed. The water in gas pipe 19 should now be drained off by opening the cock in pipe 19, the cock being held open only long enough for the water in the pipe to pass out. After all the water has been disposed of, the re-filled drawer is replaced in the compartment and sealed up, and the cock in the gas pipe opened.

The purified gas is taken from the compartment or chamber 2 under the bell 28 to the place of consumption through the pipe 42.

To indicate at a distance from the apparatus, when the supply of carbid is exhausted, I have provided each pipe 16 with an L-shaped branch $16^a$ preferably open at its top and extending above the top of the partition 18 in the funnel 17. Pivotally mounted in a position adjacent to the upper open ends of the pipes $16^a$ are the contact levers $16^b$, one end of each of which is designed to make contact with a contact plate $16^c$, while the opposite ends, which are located over the open upper ends of pipes $16^a$ carry the rods $16^d$ having floats $16^e$ at the lower ends thereof. The lever $16^b$ and plate $16^c$ are in the circuit of a bell and battery, and as the water rises in pipes 16, it enters pipes $16^a$ and when it reaches the floats forces the contact lever $16^b$ into contact with plate $16^c$ thus closing the circuit and sounding the bell, which may be located in the house and thus indicate that the carbid in one compartment has been exhausted.

In order to minimize the danger of explosion, I provide the bell 28 with a downwardly projecting tube $28^a$ open at its lower end and provided near its lower end and in a plane above the lower edge of the skirt of the bell, with an opening $28^b$, the latter being normally below the water level in the body of the generator. This tube $28^a$ embraces a pipe $28^c$ which leads from a point near the top of the generator to a point remote from the generator. With this improvement if the bell be lifted sufficiently high by the pressure of the gas below, to bring the hole $28^b$ in a plane above the water level, the excess of gas passes through hole $28^b$ into tube $28^a$, thence up through the latter and out through safety pipe $28^c$, thus absolutely preventing the bell from being lifted sufficiently high to carry the lower edge of the skirt out of the water seal in the body of the generator, and consequently preventing the escape of any gas into the room in which the generator is located.

By providing the generator with two separate and distinct carbid chambers, and providing each chamber with a drawer divided into compartments into which water is successively admitted, the danger of over production and consequent leakage and explosion is reduced to a minimum, as only a comparatively small quantity of carbid in a single compartment of the drawer is subjected to the action of water at a time. If the gas be not used as rapidly as it is generated the flow of water will be automatically shut off, thus limiting the generation of gas to the single compartment of the drawer that is being supplied with water. As the gas is used the decreased volume and pressure within the bell causes the latter to drop and thus automatically as previously explained, start up the water supply. By this arrangement the entire operation, except charging and discharging the carbid drawers, is automatic, no attention whatever being required on the part of the user.

It is evident that many slight changes might be resorted to in the relative arrangement of parts shown and described without departing from the spirit and scope of my invention hence I would have it understood that I do not wish to confine myself to the exact construction and arrangement of parts shown and described, but,

Having fully described my invention what I claim as new and desire to secure by Letters-Patent, is:—

1. In an acetylene gas generator, the combination with a tank or container divided into two compartments by a horizontal partition and two carbid compartments within the lower compartment of the tank, of a

water pipe leading to each carbid compartment, a branch pipe connected with each supply pipe, a float in each branch pipe, and an electric circuit closer operated by each float, whereby when the water fills the carbid compartment and water supply pipe, the float will close an electric circuit and sound an alarm.

2. In an acetylene gas generator, the combination with a tank or container divided into two compartments by a horizontal partition, and two carbid compartments within the lower compartment of the tank, of a water pipe leading to each carbid compartment, a funnel common to said water pipes, a partition in the funnel intermediate the pipes, a branch pipe connected with each supply pipe, a float in each branch pipe, and an electric circuit closer operated by each float, whereby when the water fills the carbid compartment and water supply pipe leading thereto, the float will close an electric circuit and sound an alarm.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

LUDWIG JANECEK.

Witnesses:
J. C. Cook,
F. Dolezal.